REMOVABLE CLIP WITH USER INTERFACE

BACKGROUND

[0001] 1. Field of the Invention

[0002] The present invention relates generally to removable clips with user interfaces. More particularly, the present invention relates to a clip that provides a user interface to an electronic computing device and is operable to selectively attach the device to an object.

[0003] 2. Description of the Related Art

[0004] Various types of clips are provided today with portable electronic computing devices such as media players (e.g., music player or video player). The clips today typically serve only one function, which is to clip the device to various objects such as a person's clothing. As a result of such typical purposes of clips, clips usually only operate to mechanically connect the electronic computing device to another object. In some cases, the clips are used with electronic computing devices having electronic displays. In such cases, the clips are necessarily provided on a surface of the device other than the surface having the display, since doing otherwise would result in the clip undesirably interfering with the display. Often, the clip is physically integrated with the electronic computing device such that the clip and device form a single unit. Such a unit necessarily has a thicker width than the electronic computing device alone, which is in many cases disadvantageous for marketing purposes.

[0005] While today's clips provide a valuable function for portable electronic computing devices, they are deficient in that the real estate used by the clips is underutilized in that the clips are only used to attach electronic computing devices to other objects. Such underutilization is particularly undesirable as technology continues to miniaturize since even the smallest amount of real estate used by a device is often considered burdensome by a consumer.

SUMMARY

[0006] Embodiments of the present invention generally concern systems, apparatus's, and methods for providing a removable clip with a user interface to electronic computing devices. In one embodiment, the user interface may be configured to operate as a clip, thereby enabling the electronic computing device to be removably attached to an object such as a person's clothing. The user interface may also be operable to receive user inputs (via, e.g., a touch pad) and thereby control an electronic computing device. In some embodiments, the user interface may be transparent. As a result, information such as icons displayed on the electronic computing device may be visible to the user via the transparent user interface. The electronic computing device may then be responsive to user engagement with the clip based on locations of the user engagement and their correspondence to the icons displayed on the electronic computing device. In this fashion, a portable user interface may be provided that significantly enhances the functionality and usability of existing devices, and in some cases may also advantageously operate as a clip.

[0007] In one embodiment, the user interface may be configured to operate as a clip, and the user interface may be operable to display information (via, e.g., an LCD). By coupling the clip to an electronic computing device, the electronic computing device may thereafter display information on the clip via the user interface. In some embodiments, the display capability of the clip may be combined with the ability to receive user inputs (e.g., a touch pad may be layered over an LCD). In this fashion, a significant amount of functionality may be added to existing devices, and in some cases the device may also advantageously operate as a clip.

[0008] Various other features may also provide numerous other advantages over the state of the art. For example, the user interfaces may include tactile feedback elements such as rubber domes. In this fashion, a user may be able to easily cause the electronic device to perform a function without visually seeing the device or user interface.

[0009] For a fuller understanding of the nature and advantages of embodiments of the present invention, reference should be made to the ensuing detailed description and accompanying drawings. Other aspects, objects and advantages of the invention will be apparent from the drawings and detailed description that follows. However, the scope of the invention will be fully apparent from the recitations of the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] FIG. **1** illustrates a portable electronic system according to a first embodiment.

[0011] FIG. **2**A illustrates a perspective view of a portable electronic system having a removable user interface coupled to an electronic computing device in a first orientation.

[0012] FIG. **2**B illustrates a side view of the portable electronic system shown in FIG. **2**A.

[0013] FIG. **3**A illustrates a perspective view of a portable electronic system having a removable user interface coupled to an electronic computing device in a second orientation.

[0014] FIG. **3**B illustrates a side view of the portable electronic system shown in FIG. **3**A.

[0015] FIG. **4**A shows a removable user interface having a side profile according to a first embodiment.

[0016] FIG. **4**B shows a removable user interface having a side profile according to a second embodiment.

[0017] FIG. **4**C shows a removable user interface having a side profile according to a third embodiment.

[0018] FIG. **4**D shows a removable user interface having a side profile according to a fourth embodiment.

[0019] FIG. **4**E shows a removable user interface having a side profile according to a fifth embodiment.

[0020] FIG. **5**A shows a removable user interface having tactile feedback elements according to a first embodiment.

[0021] FIG. **5**B shows a removable user interface having tactile feedback elements according to a second embodiment.

[0022] FIG. **5**C shows a removable user interface having tactile feedback elements according to a third embodiment.

[0023] FIG. **5**D shows a removable user interface having tactile feedback elements according to a fourth embodiment.

[0024] FIG. **6**A shows a top surface of a removable user interface having a according to a first embodiment.

[0025] FIG. **6**B shows a top surface of a removable user interface according to a second embodiment.

[0026] FIG. **6**C shows a top surface of a removable user interface according to a third embodiment.

[0027] FIG. **6**D shows a top surface of a removable user interface according to a fourth embodiment.

[0028] FIG. **7**A shows a cross-section of a plug according to a first embodiment.

[0029] FIG. **7**B shows a cross-section of a plug according to a second embodiment.